

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte VICTOR ROBERTS AUGSBURG,
JEFFREY TODD BRIDGES, THOMAS K. COLLOPY,
JAMES N. DIEFFENDERFER, and THOMAS ANDREW SARTORIUS

Appeal No. 2002-1672
Application No. 09/412,124

ON BRIEF

Before RUGGIERO, BARRY, and BLANKENSHIP, Administrative Patent Judges.

RUGGIERO, Administrative Patent Judge

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 1-8 and 12-22, which are all of the claims pending in the present application. Claims 9-11 have been canceled.

Appeal No. 2002-1672
Application No. 09/412,124

The disclosed invention relates to the tracing of program code execution in which changes in instruction flow from a normal code execution stream are monitored. More particularly, synchronizing events are periodically generated and sent to a trace acquisition buffer enabling the tracing of instructions before and after a triggering event.

Claim 1 is illustrative of the invention and reads as follows:

1. A circuit for tracing program execution within a processor, said circuit comprising:

circuitry for acquiring instructions occurring before and after a triggering event; and

circuitry for providing said acquired instructions externally from said processor.

The Examiner relies on the following prior art:

Nakano	5,146,586	Sep. 08, 1992
Mehring	5,675,729	Oct. 07, 1997
		(filed Aug. 19, 1996)
Argade et al. (Argade)	5,724,505	Mar. 03, 1998
		(filed May 15, 1996)
Bridges et al. (Bridges)	5,809,293	Sep. 15, 1998
		(filed Jul. 29, 1994)
Baird et al. (Baird)	5,848,264	Dec. 08, 1998
		(filed Oct. 25, 1996)
Circello et al. (Circello)	5,964,893	Oct. 12, 1999
		(filed Aug. 30, 1995)

Appeal No. 2002-1672
Application No. 09/412,124

Claims 1-8 and 12-22 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failure to particularly point out and distinctly claim the invention. Claims 1, 2, 4, 5, 12, 17, 19, 20, and 22 stand rejected under 35 U.S.C. § 102(e) as being anticipated by each one of Circello and Argade. In a rejection under 35 U.S.C. § 103(a), claims 1-4, 5, 7, 12-14, 17, 19, 20, and 22 stand rejected. As evidence of obviousness, the Examiner offers Nakano in view of Baird with respect to claims 1, 2, 4, 5, 12, 17, 19, 20, and 22, adds Mehring to the basic combination with respect to claims 3 and 13, and adds Argade to the basic combination with respect to claims 7 and 14. In further, separate, rejections under 35 U.S.C. § 103(a), claims 1-7, 12-14, 17-20, and 22 stand rejected as being unpatentable over Bridges in view of Nakano, and as being unpatentable over Argade in view of Nakano.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs¹ and Answer for the respective details.

OPINION

¹ The Appeal Brief was filed October 16, 2001 (Paper no. 12). In response to the Examiner's Answer dated December 10, 2001 (Paper No. 13), a Reply Brief was filed February 12, 2002 (Paper No. 14), which was acknowledged and entered by the Examiner as indicated in the communication dated February 21, 2002 (Paper No. 15).

Appeal No. 2002-1672
Application No. 09/412,124

We have carefully considered the subject matter on appeal, the rejections advanced by the Examiner and the evidence of anticipation and obviousness relied upon by the Examiner as support for the prior art rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellants' arguments set forth in the Briefs along with the Examiner's rationale in support of the rejections and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that claims 1-8 and 12-22 particularly point out the invention in a manner which complies with 35 U.S.C. § 112, second paragraph. It is also our view, after consideration of the record before us, that the Circello and Argade references do not fully meet the invention as set forth in claims 1, 2, 4, 5, 12, 17, 19, 20, and 22. With respect to the Examiner's obviousness rejections, we are further of the opinion that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the invention as recited in claims 1-7, 12-14, 17-20, and 22. Accordingly, we reverse.

We also use our authority under 37 CFR § 1.196(b) to enter a new ground of rejection of independent claim 1. The basis for these conclusions will be set forth in detail below.

Appeal No. 2002-1672
Application No. 09/412,124

With respect to the Examiner's U.S.C. § 112, second paragraph, rejection of appealed claims 1-8 and 12-22, we note that a claim must set out and circumscribe a particular area with a reasonable degree of precision and particularity when read in light of the disclosure as it would be by the artisan. In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed in light of the specification. Seattle Box Co. v. Industrial Crating & Packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984).

The Examiner has taken the position (Answer, pages 6, 16, and 17) that the intended meaning of the "triggering event" language appearing in the appealed claims is unclear. According to the Examiner, the TE "triggering" event described in Appellants' specification is a mere point of interest relative to the acquired instructions and does not actually "trigger" anything.

After reviewing the arguments of record, we are in agreement with Appellants (Brief, pages 6-12; Reply Brief, pages 1 and 2) that no ambiguity or lack of clarity exists in the claim language. Our review of Appellants' disclosure reveals a clear

Appeal No. 2002-1672
Application No. 09/412,124

description of a series of events that are set in motion or "triggered" on the detection of a TE (triggering event). For example, pages 20 and 21 describe the broadcast of data externally from the processor when a TE is detected, while lines 10-22 at page 24 describe the data acquiring operation of the trace acquisition buffer on recognition of a TE event.

While there is no question that Appellants have presented very broad claims in defining their invention, it is well settled that the breadth of a claim is not to be equated with indefiniteness. In re Miller, 441 F.2d 689, 692, 169 USPQ 597, 600 (CCPA 1971). It is our view that the skilled artisan, having considered the specification in its entirety, would have no difficulty ascertaining the scope of the invention recited in claims 1-8 and 12-22. Therefore, the rejection of claims 1-8 and 12-22 under the second paragraph of 35 U.S.C. § 112 is not sustained.

Turning to a consideration of the Examiner's 35 U.S.C. § 102(e) rejections of claims 1, 2, 4, 5, 12, 17, 19, 20, and 22 based on each one of Circello and Argade, we do not sustain these rejections as well. We note that anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a

Appeal No. 2002-1672
Application No. 09/412,124

claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

With respect to the anticipation rejection of independent claims 1 and 12 based on Circello, the Examiner attempts to read the various limitations on the Circello reference. In particular, the Examiner (Answer, page 7 and 17) points to various passages at columns 18, 19, 22, 25, 26, and 29 of Circello.

Appellants' arguments in response assert a failure of Circello to disclose every limitation in independent claims 1 and 12 as is required to support a rejection based on anticipation. At pages 13 and 14 of the Brief and pages 2 and 3 of the Reply Brief, Appellants' arguments focus on the contention that, contrary to the Examiner's interpretation of the disclosure of Circello, there is no disclosure that instructions are acquired before and after a triggering event as claimed.

After reviewing the Circello reference in light of the arguments of record, we are in general agreement with Appellants' position as expressed in the Briefs. Our interpretation of the disclosure of Circello coincides with that of Appellants, i.e., we simply find no disclosure, either in the passages cited by the Examiner, or elsewhere in the reference, that discloses the before and after acquiring of instructions on occurrence of a triggering event. Even assuming, arguendo, the breakpoint operation in Circello could be considered a "triggering event," we find, at best, the acquiring of instructions after the breakpoint, not before.

In answering Appellants' arguments, we recognize that the Examiner has offered (Answer, page 17) an inherency argument asserting that a user would find it inherent to designate an event occurrence in order to examine the circumstances surrounding the event. We agree with Appellants (Reply Brief, page 3), however, that Circello is totally devoid of any support for such assertion. To establish inherency, evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and would be recognized as such by persons of ordinary skill. In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) citing

Appeal No. 2002-1672
Application No. 09/412,124

Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Id. citing Continental, 948 F.2d at 1269, 20 USPQ2d at 1749.

With respect to the Examiner's 35 U.S.C. § 102(e) rejection of independent claims 1 and 12 based on Argade, we find the Examiner's attempt to find corresponding disclosure in Argade to be similarly deficient as that previously discussed with regard to Circello. We find no description in the columns 4 and 5 disclosure of Argade pointed to by the Examiner, nor elsewhere in Argade, that would support the Examiner's contention that instructions are acquired before and after a triggering event as claimed. As with the Circello reference, Argade, at best, discloses the acquiring of instructions after a triggering event, arguably the breakpoint as discussed at column 6, lines 28-39, but we find no disclosure of acquiring instructions before such event as claimed.

Appeal No. 2002-1672
Application No. 09/412,124

In view of the above discussion, since all of the claim limitations are not present in the disclosure of either one of Circello or Argade, we do not sustain the Examiner's 35 U.S.C. § 102(e) rejections of independent claims 1 and 12, nor of claims 2, 4, 5, 17, 19, 20, and 22 dependent thereon.

We next consider the Examiner's various 35 U.S.C. § 103(a) rejections of the appealed claims. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert.

denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

Initially, the Examiner has combined Nakano with Baird in an obviousness rejection of claims 1, 2, 4, 5, 12, 17, 19, 20, and 22. In making this rejection (Answer, page 10), the Examiner has relied on Baird to provide a teaching of applying acquired trace instructions externally from a processor, a feature not explicitly disclosed in Nakano.

After reviewing Appellants' arguments in response, we are in ultimate agreement with Appellants that the Examiner has not established a prima facie case of obviousness. Although we do not agree with Appellants that the "exceptional event" in Nakano which triggers a failure recovery procedure can not be considered a triggering event, as discussed in more detail infra, we do agree with Appellants (Reply Brief, page 4) that Nakano acquires address information and not instructions as claimed.

We further find that the Examiner, instead of pointing to teachings in the Nakano and Baird references which might suggest their combination, has improperly relied upon his own unsupported allegations as to what would have been a "well known obvious modification." (Answer, page 10). See In re Lee, 277 F.3d 1338, 1344-45, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002), in which the court required evidence for the determination of unpatentability by clarifying that the principles of "common knowledge" and "common sense" may only be applied to analysis of evidence, rather than be a substitute for evidence. The court has also recently expanded their reasoning on this topic in In re Thrift, 298 F. 3d 1357, 1363, 63 USPQ2d 2002, 2008 (Fed. Cir. 2002).

Since it is our opinion, for all of the above reasons, that the Examiner has not established a prima facie case of obviousness, the 35 U.S.C. § 103(a) rejection of claims 1, 2, 4, 5, 12, 17, 19, 20, and 22 based on the combination of Nakano in view of Baird is not sustained.

Turning to a consideration of the Examiner's 35 U.S.C. § 103(a) rejections of dependent claims 3 and 13, in which Mehring is added to the combination of Nakano and Baird, and of dependent claims 7 and 14 in which Argade is added to the combination of Nakano and Baird, we do not sustain these

rejection as well. The Mehring and Argade references have been applied by the Examiner to address the claimed triggering event timing (claims 3 and 13) and FIFO serialization features (claims 7 and 14), respectively. We find nothing in either of these references, either individually or collectively, which would overcome the innate deficiencies of the Nakano and Baird references discussed supra.

We next consider the Examiner's obviousness rejection of claims 1-7, 12-14, and 17-20, and 22 based on the combination of Brides in view of Nakano. In making this rejection, the Examiner (Answer, pages 12 and 13) has relied on that portion of Nakano which describes acquiring information before a triggering event to remedy the deficiencies of Bridges which describes the acquiring of instructions only after a triggering event.

As previously discussed, although we do not agree with Appellants that Nakano does not describe a triggering event, we do agree that the Examiner's analysis and line of reasoning does not establish a prima facie case of obviousness. We simply find no evidence from the Examiner to support the asserted conclusion (Answer, page 19) that merely because individual references provide a teaching of acquiring instructions, respectively, before and after a triggering event, that this would lead to the

Appeal No. 2002-1672
Application No. 09/412,124

obviousness of combining the teachings to result in the invention as claimed. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F. 2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). Accordingly, since, in our view, the Examiner has not established a prima facie case of obviousness, the 35 U.S.C. § 103(a) rejection of claims 1, 2, 4-7, 12-14, 17-20, and 22 based on the combination of Bridges in view of Nakano is not sustained.

Lastly, and for similar reasons just discussed, we also do not sustain the Examiner's obviousness rejection of claims 1-7, 12-14, 17-20, and 22 based on the combination of Argade in view of Nakano. As with the previous combination of Bridges and Nakano, the Examiner has suggested the obviousness to the skilled artisan of combining a teaching of acquiring instructions after a triggering event (Argade) with that portion of Nakano which teaches acquiring information before an event. As before, we simply find no evidence provided by the Examiner which would support such a conclusion of obviousness.

Rejection under 37 CFR § 1.196(b)

We make the following new ground of rejection using our authority under 37 CFR § 1.196(b).

Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakano (U.S. Patent No. 5,146,586) in view of Bridges (U.S. Patent No. 5,809,293), each of record, and cited and applied by the Examiner in this appeal. Nakano discloses, in particular in the description beginning at column 3, line 21, the storing in tracer memory 7 of instruction address information occurring before an "exceptional event," in this case an event which "triggers" the execution of a failure recovery procedure. It is further clear from the description at column 3, lines 51-62 in Nakano that instruction address information related to the execution of the failure recovery procedure, which recovery procedure is initiated after the occurrence of the "exceptional event," is also stored in tracer memory 7. This is apparent since, as further disclosed in Nakano, on occurrence of a second "exceptional event" during the execution of the failure recovery procedure, the execution history of the failure recovery procedure is preserved in tracer memory 7.

Accordingly, Nakano discloses the claimed invention except that Nakano lacks an explicit disclosure of storing acquired instructions in tracer memory, referring instead to the storing of addresses, while also lacking an explicit disclosure of providing the acquired instructions externally from the processor. Bridges, however, provides a clear disclosure in Figure 1, along with the accompanying description beginning at column 4, line 1, of a tracing technique in which acquired instructions related to a triggering event (Bridges, column 6, lines 34-38) are stored and outputted externally over pins 118 and 119. It is submitted that the skilled artisan would have recognized and appreciated the obviousness of utilizing acquired instruction data for tracing purposes as taught by Bridges instead of the acquired address data feature of Nakano, since the use of address data rather than instruction data is merely a shorthand technique for tracing program execution history. It is further submitted that, although Nakano has no explicit disclosure of the external output of acquired tracing information, the skilled artisan would also have recognized and appreciated the obviousness of such a feature as taught by Bridges since the precise disclosed purpose of the tracing tool of Nakano (column 1, line 47) is to enable a user to identify the

cause of an "exceptional event" which initiated the execution of a failure recovery procedure.

We note that while Appellants' arguments of record in this appeal have attacked Nakano as failing to disclose a "triggering event" as claimed (Brief, page 16), we do not find such arguments to be persuasive. We fail to see how the "exceptional event" described by Nakano which initiates a failure recovery procedure can be anything but a "triggering event," especially in view of the fact that Appellants' own disclosure (specification, pages 22-24) describes an example of a trace triggering event to be the vectoring of instructions to an exception handling routine.

We further note that, although the combination of the Nakano and Bridges references has been applied only against independent claim 1, this is not to be taken as an indication of the patentability of any of the other claims on appeal. In any resumption of the prosecution of this application before the Examiner, the Examiner should consider the applicability of Nakano and Bridges, as well as the other prior art of record and any other discovered prior art, to all of the pending claims.

In summary, we have reversed the Examiner's 35 U.S.C. § 112, second paragraph, rejection of claims 1-8 and 12-22, as well as the 35 U.S.C. § 102(e) rejections of claims 1, 2, 4, 5, 12, 17,

Appeal No. 2002-1672
Application No. 09/412,124

19, 20, and 22, and the 35 U.S.C. § 103(a) rejections of claims 1-7, 12-14, 17-20, and 22. We have also entered a new ground of rejection against claim 1 under 37 CFR § 1.196(b).

As indicated supra, this decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b) (amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53131, 53197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. Office 63, 122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides that, "A new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (§ 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

Appeal No. 2002-1672
Application No. 09/412,124

No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR §
§ 1.136(a).

REVERSED

37 CFR § 1.196(b)

Joseph F. Ruggiero)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
Lance Leonard Barry)	APPEALS
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Appeal No. 2002-1672
Application No. 09/412,124

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